

PROCEEDINGS
OF THE
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TWO NEW SALAMANDERS OF THE GENUS
DESMOGNATHUS.

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The following descriptions of one new species and one new subspecies of *Desmognathus* are published in the course of a revision of the genus now in progress.

***Desmognathus monticola* sp. nov.**

Type from Elk Lodge Lake, near Brevard, North Carolina, altitude about 3000 feet; No. 38,313, adult male, U. S. National Museum; collected July 13, 1908, by Ronald and Emeline Tipping.

Diagnosis.—Vomerine teeth always present. Parasphenoid teeth usually confluent anteriorly. Legs stout, 3 intercostal spaces between appressed toes of adult. A distinct color pattern. Belly uniform, usually light. Transformed specimens, total length, 30-135 mm.; length of head and body, 17-64 mm.

Description.—The vomerines form two short slightly arched series which approximate each other in the median line. The parasphenoids are usually confluent in front. They are long narrow series and are well distant from each other save in front. Their distance from the vomerines is about equal to the length of one of the vomerine series. The relative shape of the tail is about as in *fusca*; the relative length is greater; it is not flattened as in *quadramaculata*. The legs are stout. In young specimens the appressed toes are separated by 2 costal interspaces, in adults by 3. The length of the head is from 4-4½ in the length of head and body. The head width is from 5-6 in the length of head and body. This is the second largest form of the genus with medium head and body, long tail and medium legs. The skin of the head is sometimes rugose as in *quadramaculata*. The costal grooves are 13-14. There is always a tubercle in the anterior angle of the eye.

The color of this form is much like that of *fusca*, but shows certain

differences. The light dorsal spots are smaller and more heavily outlined with dark. They do not break up until the animal is practically mature and the dorsal color is almost black, whereas in *fusca* it is seldom even in the smallest specimens that they have not coalesced into a light dorsal band. When these spots do coalesce in *monticola* portions of the dark outline are left as conspicuous dark spots on the generally pale dorsal band. The ventral coloration is practically uniform and lacks all trace of the mottling so conspicuous in *fusca*. The sides are not mottled as in *fusca*, but the dark lateral band merges gradually into the pale ventral surface. In the young the ventral surface is unpigmented. A uniform pigmentation gradually encroaches on the belly from the sides inwards and from behind forwards, so that the last unpigmented part of the ventral surface is between the fore legs. Eventually the whole belly is uniformly and lightly pigmented. In some specimens this pigmentation is fairly dark, never however becoming as dark as in *quadramaculata*. In comparing *monticola* with the latter it should be remembered that *monticola* usually retains traces of the dorsal pattern and never has the light lateral band so characteristic of young and medium *quadramaculata*.

The only sexual difference discernible in this form is the very slightly more flexuous outline of the jaws in the male.

Remarks.—This animal is between *fusca* and *quadramaculata*, with which two species it has been hitherto confused. Although very closely related to *fusca*, it does not seem to intergrade with it in the mountains of Virginia and West Virginia where they occur together. So far as known *fusca* does not occur in the mountains of North Carolina.

Distribution.—From Clarke County, Virginia, and Greenbrier County, West Virginia, south in the Alleghanies to Brevard, North Carolina, and probably into Georgia. Zonal range, Transition and Canadian. Vertical range, 500–4500 feet.

Specimens examined.—Sixty-three, from localities as follows: *North Carolina*: Brevard (type locality), 21; Burnsville, 1; Spruce Pine-Micaville, 1; Cane River, 3; Blantyre, 2; Sunburst, 3; Joanna Bald, near Andrews, 1; Tatula Mt., near Highlands, 1. *Virginia*: Berry's Ferry, Clarke County, 1; Hanging Rock, Clarke County, 8; Clarke County, 1; Delaplane, 2; Stony Man, 1; Augusta County, 2. *West Virginia*: Greenbrier County, 2; Baileysville, 2; Star Creek, 2; Horsepen Creek, 1; Big Stony Creek, near Barger's Spring, 1.

***Desmognathus ochrophæa carolinensis* subsp. nov.**

Type from spring near top of Mt. Mitchell, North Carolina, altitude "over 6500 feet"; No. 31,135, male adult, U. S. National Museum; collected October 5, 1902, by Brimley and Sherman.

Diagnosis.—Similar to *ochrophæa*, but larger, with dark belly, and with a tubercle canthus oculi. Transformed specimens, 44–113 total length; length of head and body, 24–54 mm.

Description.—The vomerines are always present in the female. Males lose them at a total length of 65–75 mm. The vomerines form a short, scarcely arched series, containing 5–6 teeth. The series are separated from the nares by two-thirds the length of one of them, from each other by one-fourth length, and from the parasphenoids by one length. The parasphenoid series are separate for their whole length. The mandibular dentition is as in *ochrophæa*. The teeth in the male lower jaw are large, and are confined to the part anterior to the eye. The outline of the jaw is very strongly flexuous in the male. The female has a more flexuous outline of the jaw than the female of *ochrophæa*. The tail usually shows no trace of a dorsal keel, but is cylindrical throughout, and marked by strong segmented grooves, as is the tail of *Plethodon erythronatus*. The tail is quite long proportionally, being frequently longer than the head and body. The tail of the female is longer than that of the male. Males reach a larger size than do females. The number of costal interspaces between the appressed limbs is four. The head length is from 4–4½ in the length of head and body. The head width is from 5½–6 in the length of head and body. The skin of the head is finely rugose as in many specimens of *quadramaculata* and *monticola* from the North Carolina mountains. The tubercle canthus oculi is uniformly present.

The color of this form is variable. Old specimens are uniformly black. As a rule the dorsal pattern is intermediate between that of *ochrophæa* and that of *fusca*. That is, there is a very dark lateral band but the back shows traces of an original series of dorsal light spots. The blackness of the sides of the tail is as characteristic of this form as of *ochrophæa*. Unlike *ochrophæa*, the belly of *carolinensis* becomes black with age.

Remarks.—Although very close to *ochrophæa* and probably intergrading with it in the mountains of northern West Virginia, this form tends toward the other species of the genus. The presence of the tubercle canthus oculi and the darkness of the belly are both characters in which it diverges from *ochrophæa* and towards the other species of the genus. The color of the dorsal surface is usually more like that of the other forms, although some specimens from the type locality show a dorsal pattern exactly like *ochrophæa* from Pennsylvania. Cope (1889) mentions this form as a variety of *ochrophæa* on page 194 of the "Batrachia of North America."

Distribution.—From Beverly, West Virginia, south in mountains to Gwinnett County, Georgia. Canadian zone. Vertical range, 2500–6500 feet.

Specimens examined.—Sixty-one, from localities as follows: *Georgia*: Gwinnett County, 1. *North Carolina*: Mt. Mitchell (type locality), 19; Cane River, 6; Yancey County, 1; Roan Mt., 8; Blantyre, 2; Highlands, 2; Wayah Bald, 2; Tatula Mt., 1; Andrews, 1; Henderson County, 1; Haywood County, 11. *Tennessee*: Roan Mt., 7. *West Virginia*: Big Spring River, 3; Rich Mt., near Beverly, 1.

MEASUREMENTS.

(Head from tip of snout to gular fold; tail from posterior angle of vent.)

D. monticola (type series).

No. U. S. N. M.	Total length.	Head.	Body.	Tail.	Sex.	Vomer- ine teeth.	Number of costal inter- spaces between ap- pressed toes.
38,313*	116	13	45	58	♂ ad.	3-3	3
38,314	91	12	45	34	♀ ad.	5-5	3
38,315	100	12	31	49	♂	4-4	3
38,316	75	13	44	18	♂ ad.	3-3	3
38,320	58	7.5	27.5	23	juv.		2
38,321	63	7.5	25.5	30	juv.		2
38,323	46	7	19	20	juv.		2
38,324	36	5.5	14.5	16	juv.		
38,325	34	5	14	15	juv.		
38,326	31	5	12	14	juv.		

D. o. carolinensis (type series).

No. U. S. N. M.	Total length.	Head.	Body.	Tail.	Sex.	Vomerine teeth.
31,133	51	7	22	22	juv.	
31,134	44	6	18	20	juv.	
31,135*	102	11.5	40.5	50	♂ ad.	lacking
31,136	82	10	33	39	♀ ad.	4-4
31,137	65	8	24	32	♂ imm.	4-4
31,138	59	7.5	21.5	29	♀ imm.	6-6

* Type.